

I claim:

1. A semiconductor die stencil to assist in application of a printable adhesive in a desired pattern onto a semiconductor die comprising:
a sheet of material which is impervious to a printable adhesive applied thereto;
a plurality of apertures in the sheet of material defining a desired pattern for application of the printable adhesive; and
a coating applied to at least one top or one bottom surface of the sheet to retard spreading of the printable adhesive onto the at least one top or one bottom surface of the sheet without obstruction of the flow of printable adhesive through the apertures.
2. The semiconductor die stencil of claim 1, wherein both the coating and the material have a surface tension, the surface tension of the coating being less than the surface tension of the material.
3. The semiconductor die stencil of claim 2, wherein the surface tension of the coating is at least an order of magnitude less than the surface tension of the material.
4. The semiconductor die stencil of claim 1, wherein the coating is a polymeric material.
5. A semiconductor die stencil to assist in application of a printable material onto a substrate comprising:
a sheet of material which is impervious to a printable material applied thereto;
a plurality of apertures in the sheet material defining a desired pattern; and

a coating applied to at least one surface of the sheet to promote spreading of the printable material.

6. The semiconductor die stencil of claim 5, wherein both the coating and the sheet have a surface tension, the surface tension of the coating greater than the surface tension of the sheet.
7. The semiconductor die stencil of claim 5, wherein the coating is selected from the group consisting of tungsten, tungsten carbide, tungsten nitride, nickel, and nickel alloy.
8. A semiconductor die stencil to assist in application of a printable material in a desired pattern onto a semiconductor die comprising:
a sheet of material which is impervious to printable material applied thereto;
a plurality of apertures in the sheet of material defining a desired pattern for application of the printable material; and
a coating applied to at least one top or one bottom surface of the sheet to retard spreading of the printable material onto the at least one top or one bottom surface of the sheet.
9. The semiconductor die stencil of claim 8, wherein both the coating and the material have a surface tension, the surface tension of the coating being less than the surface tension of the material.

10. The semiconductor die stencil of claim 8, wherein the surface tension of the coating is at least an order of magnitude less than the surface tension of the material.
11. The semiconductor die stencil of claim 8, wherein the coating is a polymeric material.
12. A semiconductor die stencil:
 - a sheet of material;
 - a plurality of apertures in the sheet material defining a desired pattern; and
 - a coating applied to at least one surface of the sheet to promote spreading of a printable material through the apertures and onto a substrate.
13. The semiconductor die stencil of claim 12, wherein both the coating and the sheet have a surface tension, the surface tension of the coating greater than the surface tension of the sheet.
14. The semiconductor die stencil of claim 12, wherein the coating is selected from the group consisting of one or more of tungsten, tungsten carbide, tungsten nitride, nickel, and nickel alloy, in any combination.
15. The semiconductor die stencil of claim 12, wherein the printable material is selected from the group consisting of one or more of ink, polymer resins, diluted or soluble polymers, composite materials and solder paste, in any combination.

16. A semiconductor die stencil :
a sheet of material;
a plurality of apertures in the sheet material defining a desired pattern; and
a coating applied to at least one surface of the sheet to promote spreading of a printable adhesive material through the apertures and onto a substrate.
17. The semiconductor die stencil of claim 16, wherein both the coating and the sheet have a surface tension, the surface tension of the coating greater than the surface tension of the sheet.
18. The semiconductor die stencil of claim 17, wherein the coating is selected from the group consisting of one or more of tungsten, tungsten carbide, tungsten nitride, nickel, and nickel alloy, in any combination.
19. The semiconductor die stencil of claim 16, wherein the printable adhesive is an adhesive polyimide.